UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/683,607	10/09/2003	Raymond Simila		1022

34494 7590 07/17/2007

RAYMOND SIMILA
4041 N. OVERLOOK BLVD.
PORTLAND, OR 97227

EXAMINER	
BELANI, KISHIN G	

ART UNIT	PAPER NUMBER
2143	

MAIL DATE	DELIVERY MODE
07/17/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/683,607	SIMILA ET AL.	
	Examiner	Art Unit	
	Kishin G. Belani	2143	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 October 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-27* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-27* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *11/29/2003*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Preliminary Amendment

The present Office Action is based upon the original patent application filed on 10/09/2003 as modified by the preliminary amendment filed on 10/09/2003. **Claims 1-27** are now pending in the present application.

Priority

Receipt is acknowledged of provisional application submitted on 10/16/2002 under 35 U.S.C. 119(e), which papers have been placed of record in the file.

Information Disclosure Statement

The information disclosure statement submitted on 11-29-2003 has been considered by the Examiner and made of record in the application file.

Claim Objections

Claims 1, 11, 21, and 24 are objected to because of the following informalities:

Each claim should be a single sentence, with one period at the end. The above-mentioned claims have periods within and after each section [e.g. in claim 1, period after a in "a. A virtual loopback setup". Please replace by -- a) A virtual loopback setup --]. Also replace all periods within each section by semi-colons,

except at the end of the claim. Make corresponding changes in all other claims listed above.

Claims 22 and 23 are objected to because of improper reference to claim 20. The examiner has interpreted that these claims reference claim 21 instead. Likewise, **claims 25 and 27** are objected to because of improper reference to claim 23. The examiner has interpreted that these claims reference claim 24 instead.

Claims 11, 13-16, 19-21 and 24 are objected to because certain elements in these claims lack antecedent. For example, in claim 11, section a), "the loopback switch" has not been described in the text that appears earlier in the claim. Replace with "a loopback switch". The paragraph should read as:
a) Sending a command to a loopback switch requesting a virtual loopback for a specific virtual circuit;

Notice the three changes (right parenthesis instead of period, a instead of the, and semi-colon instead of period at the end). There are many such occurrences of lack of antecedent in the listed claims. Check the remaining claims also for the same informalities.

In claims 19 and 20, use of "message of claim 17" is inappropriate, since the text of claim 17 contains no message. Likewise, in claim 26, replace "The request of claim 24" by -- The request in the method of claim 24 --, because claim 24 is a method claim. Please check all other claims for similar informalities.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness
or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of

35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, 9-17, and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Wu (U.S. Patent Application Publication # 2003/0115368 A1)** in view of **Moll (U.S. Patent Publication # 5,710,760).**

Consider **claim 1**, Wu shows and discloses a system of implementing a virtual loopback in Ethernet switching elements or Ethernet networks (Abstract; Fig. 2 that shows a system for providing a loopback test for Ethernet packets transmitted over the Internet 45 by Ethernet switch 42; paragraph 0014, lines 1-13 disclose the same details), consisting of:

a virtual loopback operational process where frames are sent along a virtual circuit's normal path through the network, arrive at a loopback switch previously setup to loopback that virtual circuit, are forwarded to the switch processor, have their destination MAC address rewritten to a new MAC address used for testing, have their source MAC address rewritten as the switch processor's MAC address, and are sent back into the switching network (paragraph 0015, lines 8-29 that describe the loopback operational process in detail, including disclosing that when a special BPDU packet is received by Ethernet control circuit 461 from the network management system, the Ethernet control circuit 461 sends it to packet transmission and receiving control circuit 462; which then updates the reply packet with status information and changes a source address of BPDU

packet into a special source address that redirects the packet to the network management system for analysis and trouble-shooting; Fig. 6 that shows two commands (00 and 01) for loopback test activation and loopback test stop respectively; paragraph 0015, lines 8-29 described above and paragraph 0016, lines 1-15 that disclose a second level test to initiate the loopback by transferring the packet back to the switch);

a virtual loopback removal process where a remove virtual loopback command request is issued to the loopback switch, the issuance of acknowledgement messages by the loopback switch to inform the requester and the virtual circuit's source and/or destination of the outcome of the virtual loopback teardown command request (Fig. 6, loopback test stop 01; paragraph 0016, lines 15-23 that disclose the details of the loopback test stop command);

If successful, the loopback switch modifies its switching table so that frames belonging to the specified virtual circuit are forwarded normally, and no longer diverted to the switch processor, whereby a virtual loopback sends frames to user-specified locations in the network (paragraph 0016, lines 18-23 which disclose that after completing the loopback test stop command, Ethernet control circuit 461 receives a new special BPDU packet that causes packet transmission and receiving circuit 462 to command Ethernet control circuit to resume normal operation).

However, Wu does not specifically show and disclose a virtual loopback setup process which selects the virtual circuit to be looped back, issuance of a request virtual loopback setup command, and issuance of acknowledgement

messages by the loopback switch to inform the requester and the virtual circuit's source and/or destination of the outcome of the virtual loopback setup command request; if successful, the loopback switch modifies its switching table so that frames belonging to the specified virtual circuit are forwarded to the switch processor.

In the same field of endeavor, Moll shows and discloses a virtual loopback setup process which selects the virtual circuit to be looped back (Abstract that discloses virtual path identification (VPI) corresponding to the virtual circuit to be looped back, being provided as a parameter to the setup request; Fig. 1, VPI field contained in the address header field 11; column 6, lines 16-24 that disclose the setup process);

issuance of a request virtual loopback setup command (Abstract that discloses a loopback setup message being transmitted via a link from user-application interface (UAI block 9 in Fig. 2); Fig.2 also showing setup message 10 being sent to switches 1 and 3; column 6, lines 16-24 that disclose the same details); and

issuance of acknowledgement messages by the loopback switch to inform the requester and the virtual circuit's source and/or destination of the outcome of the virtual loopback setup command request (column 6, lines 37-41 which disclose that the results of the loopback setup request are transmitted to UAI9 over link 10 (acknowledgement message by the loopback switch));

if successful, the loopback switch modifies its switching table so that frames belonging to the specified virtual circuit are forwarded to the switch processor

(column 6, lines 31-34 which disclose that the loopback identification is changed and the test cell is looped back to the source endpoint).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a virtual loopback setup process which selects the virtual circuit to be looped back; issuance of a request virtual loopback setup command; and issuance of acknowledgement messages by the loopback switch to inform the requester and the virtual circuit's source and/or destination of the outcome of the virtual loopback setup command request; if successful, the loopback switch modifies its switching table so that frames belonging to the specified virtual circuit are forwarded to the switch processor; as taught by Moll, in the system of Wu, so as to be able to setup a loopback path before initiating the loopback packet transfer along the path for the purpose of diagnosing the path in the Ethernet network.

Consider **claim 2**, and **as it applies to claim 1 above**, Wu further discloses a system wherein the information regarding the virtual circuit information and the loopback switch identification is obtained by the issuance of a path request command, which causes an iterative query of the network to determine a virtual circuit's path through the network (paragraph 0022 which discloses that the network management system uses a Ping instruction followed by a reply within a pre-determined time to determine the identity of the path through the network).

Consider **claim 3**, and **as it applies to claim 1 above**, Wu further discloses a system wherein the virtual loopback setup request optionally specifies a timeout value which will cause the virtual loopback to be automatically released after a set amount of time (paragraph 0015, lines 21-25 which disclose that the path (line) is considered faulty, if there is no reply after a pre-determined period of time has lapsed; paragraph 0016, lines 15-23 which disclose that network management system issues a special BPDU packet to finish the loopback mode and to resume normal operation).

Consider **claim 4**, and **as it applies to claim 1 above**, Wu discloses the claimed system, except wherein the virtual loopback setup command request specifies a virtual circuit identified by a network-determined virtual circuit ID.

In the same field of endeavor, Moll discloses a virtual loopback setup command request that specifies a virtual circuit identified by a network-determined virtual circuit ID (Fig. 1 that show the parameters contained within a loopback setup command, including address header field 11 that contains VPI (Virtual Path Identification) field corresponding to the virtual circuit ID, the path for which was determined by using Ping command (claim 2 above); Fig. 3, VPI row that shows a sample value of X for the virtual circuit ID; column 4, lines 41-63 that disclose the same details).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a virtual loopback setup command request that specifies a virtual circuit identified by a network-

determined virtual circuit ID; as taught by Moll, in the system of Wu, so as to be able to identify the test packet by its virtual circuit ID, sent from the source to the loopback destination and then redirected back to the source.

Consider **claim 5**, and **as it applies to claim 1 above**, Wu discloses the claimed system, except wherein the virtual loopback setup command request specifies a loopback switch identified by a network-determined node ID.

In the same field of endeavor, Moll discloses a virtual loopback setup command request that specifies a loopback switch identified by a network-determined node ID (Fig. 1 that show the parameters contained within a loopback setup command, including loopback location ID (loopback switch 3 in Fig. 2) and source ID (source switch 1 in Fig. 2), which are the destination and source nodes of the loopback path in the Ethernet network under test).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a virtual loopback setup command request that specifies a loopback switch identified by a network-determined node ID; as taught by Moll, in the system of Wu, so as to be able to identify the destination switch that is to receive and then redirect back the test packet.

Consider **claims 9**, and **as it applies to claim 1 above**, Wu further discloses a system wherein an operating virtual loopback will be automatically removed by the network if a timeout timer was specified in the virtual loopback

setup, wherein the loopback switch itself or an external management system will automatically issue a remove virtual loopback command request (paragraph 0015, lines 21-25 which disclose that the path (line) is considered faulty, if there is no reply after a pre-determined period of time has lapsed; paragraph 0016, lines 15-23 which disclose that network management system issues a special BPDU packet to finish the loopback mode and to resume normal operation).

Consider **claims 10**, and **as it applies to claim 1 above**, Wu further discloses a system wherein an operating virtual loopback can be removed at any time by a remove loopback command request (Fig. 6, loopback test stop 01, which is shown as a test independent of the setup test 00, and therefore capable of executing any time it is invoked, even while the loopback setup is active; paragraph 0016, lines 15-23 that disclose the details of the loopback test stop command).

Consider **claim 11**, Wu shows and discloses a method for setting up a virtual loopback in Ethernet switching elements or Ethernet networks (Abstract; Fig. 2 that shows a method for providing a loopback test for Ethernet packets transmitted over the Internet 45 by Ethernet switch 42; paragraph 0014, lines 1-13 disclose the same details), comprising the following steps:
Sending a command to the loopback switch requesting a virtual loopback for a specific virtual circuit (paragraph 0015, lines 8-29 that describe the loopback operational process in detail, including disclosing that when a special BPDU

packet is received by Ethernet control circuit 461 from the network management system, the Ethernet control circuit 461 sends it to packet transmission and receiving control circuit 462; which then updates the reply packet with status information and changes a source address of BPDU packet into a special source address that redirects the packet to the network management system for analysis and trouble-shooting; Fig. 6 that shows two commands (00 and 01) for loopback test activation and loopback test stop respectively; paragraph 0015, lines 8-29 described above and paragraph 0016, lines 1-15 that disclose a second level test to initiate the loopback by transferring the packet back to the switch);

the loopback switch determining if it can implement the requested virtual loopback, if the loopback switch cannot implement the virtual loopback request, it sends a denial message back to the requestor of the virtual loopback (paragraph 15, lines 18-25 that disclose Ethernet switch 42 updating status information in the reply packet in response to loopback setup request, thereby disclosing either success or failure of the setup request and correspondingly sending either setup completion code for the status or sending error responses indicating the reasons for failure);

if the loopback switch can implement the virtual loopback, it modifies its switch table so that all frames belonging to the specified virtual circuit are switched to the switch processor (paragraph 0015, lines 10-18 which describe that the loopback switch modifies its switch table so that all frames belonging to the specified virtual circuit are switched to the switch processor), and

then sends a setup completed message to the requester, wherein now a frame can successfully be sent to a new port (paragraph 15, lines 18-25 that disclose Ethernet switch 42 updating status information in the reply packet in response to loopback setup request).

However, Wu does not specifically disclose a notification message to the source and/or destination of the virtual circuit.

In the same field of endeavor, Moll shows and discloses a notification message to the source and/or destination of the virtual circuit (column 6, lines 37-41 which disclose that the results of the loopback setup request are transmitted to UAI9 over link 10 (notification message by the loopback switch)).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to issue a notification message to the source and/or destination of the virtual circuit, as taught by Moll, in the method of Wu, so as to be able to setup a loopback path before initiating the loopback packet transfer along the path for the purpose of diagnosing the path in the Ethernet network.

Consider **claims 12**, and **as it applies to claim 11 above**, Wu discloses the claimed method, except wherein the request takes the form of OPERATE_VLOOPBACK(parameters).

In the same field of endeavor, Moll shows and discloses a method wherein the request takes the form of OPERATE_VLOOPBACK(parameters) (Fig. 1, loopback indication field 18, shown along with the required and optional

parameters in the layout of a packet; column 5, lines 7-67 and column 6, lines 1-7 that describe each of the parameters that are included in the test cell, it being understood that any programming language command invocation or function/class definition is of the format function_name(parameter_list)).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to format the loopback setup request in the format OPERATE_VLOOPBACK(parameters), so as to conform to standard programming coding techniques.

Consider **claims 13**, and **as it applies to claim 12 above**, Wu discloses the claimed method, except a loopback setup request wherein one parameter is the virtual circuit ID.

In the same field of endeavor, Moll shows and discloses a request, wherein one parameter is the virtual circuit ID (Fig. 1, address header field 11, with VPI (Virtual Path Identification) as a sub-field that corresponds to a virtual circuit ID, in the layout of a packet; column 1, lines 55-64 that disclose the same details).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a field for virtual circuit ID, so as to easily identify and associate the test cell with the loopback path being tested.

Consider **claims 14**, and **as it applies to claim 12 above**, Wu discloses the claimed method, except a loopback setup request wherein one parameter is the node ID of the loopback switch.

In the same field of endeavor, Moll shows and discloses a request, wherein one parameter is the node ID of the loopback switch (Fig. 1, source ID field 24, that corresponds to the node ID of the loopback switch; column 2, lines 13-15 that describe the source ID field of the loopback switch).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a field for the source ID of the loopback switch, so that the location where the test cell originates is included in the request as one of the parameter.

Consider **claims 15**, and **as it applies to claim 12 above**, Wu discloses the claimed method, except a loopback setup request wherein one parameter is the DESTINATION_ADDRESS within the network.

In the same field of endeavor, Moll shows and discloses a loopback setup request, wherein one parameter is the DESTINATION_ADDRESS within the network (Fig. 1, loopback location ID field 22, that corresponds to the DESTINATION_ADDRESS within the network; column 2, lines 10-13 that describe the loopback location ID field 22).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a field for the DESTINATION_ADDRESS within the network, so that the address to which the

test cell will be transmitted for loopback is included in the request as one of the parameter.

Consider **claims 16**, and **as it applies to claim 12 above**, Wu further discloses a method wherein one parameter in a loopback setup request is the virtual loopback timeout value (paragraph 0015, lines 21-25 which disclose that the path (line) is considered faulty, if there is no reply after a pre-determined period of time has lapsed; thereby disclosing that a timeout limit is one of the parameter provided in the request).

Consider **claim 17**, and **as it applies to claim 11 above**, Wu further discloses a method wherein in order to determine the loopback node, the virtual loopback requestor first requests the list of nodes traversed through the network by a given virtual circuit, and the local switch performs this inquiry by iteratively querying successive nodes along the virtual circuit path, and then presents this information to the requestor (paragraph 0022 which discloses that the network management system uses a Ping instruction followed by a reply within a pre-determined time to determine the identity of the path through the network).

Consider **claim 21**, Wu, as modified by Moll, further shows and discloses a method for operating a virtual loopback in Ethernet switching elements or Ethernet networks (Abstract; Fig. 2 that shows a method for providing a loopback test for Ethernet packets transmitted over the Internet 45 by Ethernet switch 42;

paragraph 0014, lines 1-13 disclose the same details), comprising the following steps:

the source/originator sends a frame belonging to a specific virtual circuit along its normal path through the network, when the frame reaches the loopback switch, the frame is diverted to the switch processor (paragraph 0015, lines 8-29 that describe the loopback operational process in detail, including disclosing that when a special BPDU packet is received by Ethernet control circuit 461 from the network management system, the Ethernet control circuit 461 sends it to packet transmission and receiving control circuit 462 that corresponds to the switch processor);

The switch processor rewrites the destination MAC address as the new DESTINATION_ADDRESS MAC address, and the switch processor rewrites the source MAC address as its MAC address, the switch processor sends the modified frame back to the switching matrix where normal switching rules return the frame to the new DESTINATION_ADDRESS; wherein frames are successfully sent to a new port (Figs. 3 and 6; paragraph 0016, lines 1-15 that describe the loopback operational process in detail, including disclosing that when a special BPDU packet is received by Ethernet control circuit 461 for enabling a loopback test mode, the packet transmission and control circuit 462 commands Ethernet control circuit 461 to enable I/O port 463 to enter into the loopback test mode, redirecting all packets sent to I/O port 463 back to the network management system for analysis and trouble-shooting, thereby disclosing replacing the destination MAC address by the new

DESTINATION_ADDRESS MAC address; paragraph 0015, lines 10-18 disclose that the source address of the BPDU packet is also replaced by the loopback test device's own special source address that redirects the packet to the network management system; both the source and the destination addresses of the switches being their MAC addresses as shown in Figs. 4-6);

Consider **claims 22**, and **as it applies to claim 21 above**, Wu further discloses a method wherein the virtual loopback process will timeout if a timeout parameter was specified in the virtual loopback setup (paragraph 0015, lines 21-25 which disclose that the path (line) is considered faulty, if there is no reply after a pre-determined period of time has lapsed; thereby disclosing that a timeout limit is one of the parameter provided in the request, and the process will timeout if the response is not received within the timeout period).

Consider **claims 23**, and **as it applies to claim 21 above**, Wu further discloses a method wherein the virtual loopback can be manually removed at any time (Fig. 6, loopback test stop 01, which is shown as a test independent of the setup test 00, and therefore capable of executing at any time it is invoked; paragraph 0016, lines 15-23 that disclose the details of the loopback test stop command).

Claims 6 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Wu (U.S. Patent Application Publication # 2003/0115368**

A1), in view of **Moll (U.S. Patent Publication # 5,710,760),** and further in view of **Han (U.S. Patent Publication # 6,873,599 B1).**

Consider **claim 6**, and **as it applies to claim 1 above**, Wu as modified by Moll, discloses the claimed system, except wherein the acknowledgement messages to the source and/or destination of the virtual circuit takes the form of an ICMP message.

In the same field of endeavor, Han discloses that the acknowledgement messages to the source and/or destination of the virtual circuit takes the form of an ICMP message (column 5, lines 1-6 that disclose using the IP Ping capability to send an ICMP type 8 datagram to a node of a proposed loopback path and receive an ICMP type 0 message in return).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide acknowledgement messages to the source and/or destination of the virtual circuit in the form of an ICMP message; as taught by Han, in the system of Wu, as modified by Moll, so that the source and/or destination point of the loopback virtual circuit may inform the loopback setup/teardown command requester of the completion of the loopback setup/teardown command request, ICMP being the desirable protocol to use for network housekeeping.

Consider **claim 18**, and **as it applies to claim 11 above**, Wu as modified by Moll, discloses the claimed method, except wherein the message to the source and/or destination of the virtual circuit is an ICMP message.

In the same field of endeavor, Han discloses that the message to the source and/or destination of the virtual circuit is an ICMP message (column 5, lines 1-6 that disclose using the IP Ping capability to send an ICMP type 8 datagram to a node of a proposed loopback path and receive an ICMP type 0 message in return).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide an acknowledgement message to the source and/or destination of the virtual circuit in the form of an ICMP message, as taught by Han, in the method of Wu, as modified by Moll, so that the source and/or destination point of the loopback virtual circuit may inform the loopback setup/teardown command requester of the completion of the loopback setup/teardown command request, ICMP being the desirable protocol to use for network housekeeping.

Claims 7, 8, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Wu (U.S. Patent Application Publication # 2003/0115368 A1),** in view of **Moll (U.S. Patent Publication # 5,710,760),** and further in view of **Han (U.S. Patent Publication # 6,873,599 B1), and further in view of Postel (ICMP, RFC 792, ISI, September 1981).**

Consider **claims 7 and 8**, and **as they apply to claim 6 above**, Wu as modified by Moll and Han, discloses the claimed system including ICMP reply message (type 0) in response to a ping (ICMP type 8 message) command.

However, Wu as modified by Moll and Han, does not disclose that the ICMP message conveyed is HOST UNREACHABLE (claim 7) or PORT UNREACHABLE (claim 8) for setup and teardown.

In the same field of endeavor, Jon Postel's original paper on ICMP, RFC 792, does disclose many different ICMP message types, including type 3 (Destination Unreachable) that includes code 1 for Host Unreachable, and code 3 for Port Unreachable.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, to provide acknowledgement message "HOST UNREACHABLE" or "PORT UNREACHABLE" for setup and teardown; as taught by Postel, in the system of Wu, as modified by Moll and Han, so that the loopback setup command requester may be informed of the error encountered when the loopback setup command fails to reach the intended host or port, thereby aiding in the subsequent diagnostics effort.

Consider **claims 19 and 20**, and **as they apply to claim 17 above**, Wu as modified by Moll and Han, discloses the claimed method including ICMP reply message (type 0) in response to a ping (ICMP type 8 message) command.

However, Wu as modified by Moll and Han, does not disclose that the ICMP message conveyed is HOST UNREACHABLE (claim 7) or PORT UNREACHABLE (claim 8) for setup and teardown.

In the same field of endeavor, Jon Postel's original paper on ICMP, RFC 792, does disclose many different ICMP message types, including type 3 (Destination Unreachable) that includes code 1 for Host Unreachable, and code 3 for Port Unreachable.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, to provide acknowledgement message "HOST UNREACHABLE" or "PORT UNREACHABLE" for setup and teardown; as taught by Postel, in the system of Wu, as modified by Moll and Han, so that the loopback setup command requester may be informed of the error encountered when the loopback setup command fails to reach the intended host or port, thereby aiding in the subsequent diagnostics effort.

Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Wu (U.S. Patent Application Publication # 2003/0115368 A1),** in view of **Jensen et al (U.S. Patent Publication # 6,185,612),** and further in view of **Dipperstien (U.S. Patent Publication # 6,185,191 B1).**

Consider **claim 24**, Wu shows and discloses a method for removing a virtual loopback in Ethernet switching elements or Ethernet networks (paragraph

0016, lines 15-18 that disclose a special BPDU packet being issued to finish the loopback test mode), comprising the following steps:

at any time the removal of a virtual loopback may be requested by sending a remove virtual loopback command request the loopback switch (Fig. 6, loopback test stop 01; paragraph 0016, lines 15-18 that disclose a special BPDU packet being issued to finish the loopback test mode);

If a previously configured timeout timer expires, the loopback switch issues a remove virtual loopback command request to itself (paragraph 0015, lines 21-25 which disclose that the path (line) is considered faulty, if there is no reply after a pre-determined period of time has lapsed; thereby disclosing a previously configured timeout timer; paragraph 0016, lines 15-23 which disclose that network management system issues a special BPDU packet to finish the loopback mode and to resume normal operation);

if the loopback switch can complete the request it restores the switching table such that frames belonging to a given virtual circuit are forwarded normally and are no longer diverted to the switch processor; wherein a virtual loopback is now removed and no longer affects frame traffic (paragraph 0016, lines 18-23 which disclose that after completing the loopback test stop command, Ethernet control circuit 461 receives a new special BPDU packet that causes packet transmission and receiving circuit 462 to command Ethernet control circuit to resume normal operation).

However, Wu does not explicitly disclose that after receiving the command, determining if it can complete the request, and if it cannot, to issue a denial to the requester.

In the same field of endeavor, Jensen et al. do disclose that if a request for a given service fails, that request is denied (Fig. 4, block 214; column 8, lines 32-35 which disclose that after determining that authentication of a request for a given service fails, the request is denied).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, to make a determination if a request can be completed, and if not to issue a denial to the requester, as taught by Jensen et al., in the method of Wu, so that any service request that cannot be fulfilled, is not tried repeatedly, thereby tying up system resources unnecessarily.

However, Wu, as modified by Jensen et al., does not explicitly disclose issuing a removal completed message to the requester.

In the same field of endeavor, Dipperstien does disclose issuing a removal completed message to the requester (Fig. 8, block 804; column 9, lines 43-52 which disclose that after receiving a "CLEAR ALL LOOPBACKS" command, the far end device clears all loopbacks and transmits a return message "LOOPBACKS CLEARED").

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made, to issue a removal completed message to the requester, as taught by Dipperstien, in the method of Wu, as modified by

Jensen et al., so that the requester is aware of the success of the service requested.

Consider **claims 25**, and **as it applies to claim 24 above**, Wu, as modified by Jensen et al. and Dipperstien, further discloses a method wherein the remove request takes the form REMOVE_VLOOPBACK(parameters) (Fig. 6, loopback test stop 01; paragraph 0016, lines 15-23 that disclose the details of the loopback test stop command, it being understood that any programming language command invocation or function/class definition is of the format function_name(parameter_list)).

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Wu (U.S. Patent Application Publication # 2003/0115368 A1),** in view of **Jensen et al (U.S. Patent Publication # 6,185,612),** and further in view of **Dipperstien (U.S. Patent Publication # 6,185,191 B1),** and further in view of **Moll (U.S. Patent Publication # 5,710,760).**

Consider **claims 26**, and **as it applies to claim 24 above**, Wu, as modified by Jensen et al. and Dipperstien, discloses the claimed method, except a loopback remove request wherein one parameter is the virtual circuit ID.

In the same field of endeavor, Moll shows and discloses a request, wherein one parameter is the virtual circuit ID (Fig. 1, address header field 11, with VPI (Virtual Path Identification) as a sub-field that corresponds to a virtual

circuit ID, in the layout of a packet; column 6, lines 41-43 that disclose the same details).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to include a field for virtual circuit ID, as taught by Moll, in the method of Wu, as modified by Jensen et al. and Dipperstien, so as to easily identify and associate the test cell with the loopback path being tested.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Wu (U.S. Patent Application Publication # 2003/0115368 A1),** in view of **Jensen et al (U.S. Patent Publication # 6,185,612),** and further in view of **Dipperstien (U.S. Patent Publication # 6,185,191 B1),** and further in view of **Han (U.S. Patent Publication # 6,873,599 B1).**

Consider **claim 27**, and **as it applies to claim 24 above**, Wu as modified by Jensen et al. and Dipperstien, discloses the claimed method, except wherein the notification to the source and/or destination of the virtual circuit takes the form of an ICMP message.

In the same field of endeavor, Han discloses that the message to the source and/or destination of the virtual circuit is an ICMP message (column 5, lines 1-6 that disclose using the IP Ping capability to send an ICMP type 8 datagram to a node of a proposed loopback path and receive an ICMP type 0 message in return).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to provide a notification message to the source and/or destination of the virtual circuit in the form of an ICMP message, as taught by Han, in the method of Wu, as modified by Jensen et al. and Dipperstien, so that the source and/or destination point of the loopback virtual circuit may inform the loopback setup/teardown command requester of the completion of the loopback setup/teardown command request, ICMP being the desirable protocol to use for network housekeeping.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

US Patent Publication # 6,370,146 B1, inventors: Higgins et al., filed 06/29/1998

US Patent Publication # 6,392,990 B1, inventors: Tosey et al., filed 07/23/1999

US Patent Publication # 6,581,166 B1, inventors: Hirst et al., filed 03/01/2000

Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Art Unit: 2143

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building

401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Kishin G. Belani whose telephone number is (571) 270-1768. The Examiner can normally be reached on Monday-Thursday from 6:30 am to 5:00 pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, David Wiley can be reached on (571) 272-3923. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-0800.

DAVID WILEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100